MASPS for ADS-B Rev. A

Tracking Information (committee secretary only)	
Change Issue Number	11
Submission Date	1/11/01
Status (open/closed/deferred)	CLOSED
Last Action Date	5/24/01

Short Title for Change Issue:	Requests for clarification on "TCP types" and the use of the "TCP Data Valid" subfield.

MASPS Document Reference:		Originator Information:	
Entire document (y/n)		Name	Bob Hilb / UPS
Section number(s)	2.1.2.3.2.1	Phone	(502) 359-7396
Paragraph number(s)		E-mail	Bob.hilb@air.ups.com
Table/Figure number(s)	Tables 3-6 and 3-7	Other	

Proposed Rationale for Consideration (originator should check all that apply):	
	Item needed to support of near-term MASPS/MOPS development
X	DO-260/ED-102 1090 MHz Link MOPS Rev A
	ASA MASPS
	TIS-B MASPS
	UAT MOPS
	Item needed to support applications that have well defined concept of operation
	Has complete application description
	Has initial validation via operational test/evaluation
	Has supporting analysis, if candidate stressing application
	Item needed for harmonization with international requirements
	Item identified during recent ADS-B development activities and operational evaluations
	MASPS clarifications and correction item
	Validation/modification of questioned MASPS requirement item
	Military use provision item
X	New requirement item (must be associated with traffic surveillance to support ASAS)

Nature of Issue:		Editorial		Clarity		Performance	X	Functional

Issue Description: The attached comments **requesting clarification of the various TCP types (TCP Leg types) and a note be added to the 1090 MOPS to help better explain the use of the "TCP Data Valid" Subfield** were presented to the SC-186 plenary in reference to the ballot on the 1090 MHz ADS-B MOPS (DO-260). It was agreed that these issues would be deferred from consideration in DO-260 until first considered for inclusion in a future revision of the ADS-B MASPS. Included with the attached comments are the official responses from working group 3, which was charted with development of DO-260.

Originator's proposed resolution if any: Proposed resolution is attached with comment from DO-260 ballot. A specific MASPS change proposal related to this topic is found on attachment #2 which was submitted by Capt. Hilb in November, 2000.

Working Group 6 Deliberations:

February 13, 2001: Chris Moody's comment from the DO-260 ballot was added to this Issue Paper as a result of the ad hoc groups deliberations at their January, 2001 meeting. This comment was previously not included in any Issue Papers.

(continued on next page)

Working Group 6 Deliberations (continued):

May 24, 2001: This Issue Paper was discussed by the ad hoc group at their May 2001 meeting. It was agreed to CLOSE this Issue Paper and integrate Capt. Hilb's specific proposal documented in attachment #2 into Issue Paper 21, "TCP Types and Parameters".

#	Comment Author	DO-260 Section	Page	Comment / Rationale	Suggested Resolution
14	C.Moody (7)	2.2.3.2.7.1.3	91	Are all these various trajectory types required by the MASPS? Doesn't the MASPS assume a straight geodesic course to all TCPs? **WG#3 Position:** *Non-issue. WG#3 admittedly went beyond the MASPS requirements.*	Include a NOTE that explains why this capability beyond the MASPS is included.
15	Hilb (5)	2.2.3.2.7.1.4	92	The use of TCP Data Valid Subfield is not well explained. **Temporary resolution:** Changed 2.2.3.2.7.1.4 to show zero (0) as the only acceptable coding value for initial 1090 MOPS publication. Changed 2.4.3.2.7.1.4, Step 1 to test for condition zero (0) only. **WG#3 Position:** *WG#3 agrees this issue needs addressed in DO-242A.*	Add **Note:** *The TCP Valid Subfield is used to indicate that the aircraft is flying to the broadcast TCP and will arrive at the time projected. This indication is intended primarily for new aircraft and manufacturers will design automation systems to insure a TBD level of compliance to a TCP before indicating the information is valid.*

2.1.2.3.2.1 Current Trajectory Change Point

The TCP from the transmitting aircraft is the point in three-dimensional space where the current operational trajectory is planned to change, and estimated remaining flight time to that point. A TCP transmission indicates that the aircraft intends to fly directly, via a great circle route, to that point. The TCP is defined as a five-element vector consisting of the following:

- Latitude (WGS-84)
- Longitude (WGS-84)
- Altitude (pressure altitude or flight level)
- Time to go (TTG) to the indicated point in space
- Validity bit

Note: The Validity bit is used to indicate that the aircraft is flying to the broadcast TCP and will arrive at the time projected. This indication is intended primarily for new aircraft and manufacturers will design automation systems to insure a TBD level of compliance to a TCP before broadcasting this bit.

The TCP required received…

3.4.4 Minimum ADS-B Report Requirements for Equipage Classes

Table 3-6 Mode-status Report Definition

Element #	Contents
1	Participant Address (Section 2.1.2.1.2)
2	Call Sign (Up to 8 Alpha-numeric Characters) (Section 2.1.2.1.1)
3	Participant Category (Section 2.1.2.1.3)
4	Surveillance Support Code(Normal/Default) (note 3)
5	Emergency/Priority Status (Section 2.1.2.3.1)
6	Class Codes (Section 2.1.2.4)
7	TCP Latitude (Section 2.1.2.3.2)
8	TCP Longitude (Section 2.1.2.3.2)
9	TCP Altitude (Baro Alt/FL) (Section 2.1.2.3.2)
10	TCP Validity(Section 2.1.2.3.2)
~~10~~11	TTG (Section 2.1.2.3.2)
~~11~~12	Operational Mode Specific Data
~~12~~13	Flight Mode Specific Data (note 4)
~~13~~14	Time of Applicability (Section 2.1.1.4)
15	ACAS/TCAS Capability Code (Section 2.1.2.5)

Proposed MASPS Changes

Table 3-7 TCP+1 On-Condition Report Definition

Element #	Contents
1	Participant Address (Section 2.1.2.1.2)
2	TCP+1 (Lat.) (Section 2.1.2.3.2)
3	TCP+1(Long.) (Section 2.1.2.3.2)
4	TCP+1 Altitude (Baro/FL) (Section 2.1.2.3.2)
5	TCP+1 TTG (Section 2.1.2.3.2)
6	TCP Validity(Section 2.1.2.3.2)
~~6~~7	Time of Applicability (Section 2.1.1.4)